

Neutrophil-Lymphocyte Ratio (NLR) as a simple tool in predicting prognosis and sepsis severity for district hospital setting

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Introduction

In Malaysia, sepsis is one of the leading cause of intensive care unit (ICU) admission. Delayed in recognition of sepsis will result in increased mortality and morbidity. NLR can be calculated by dividing neutrophil count to lymphocyte count. Both parameters can be found in complete blood count test which available in most healthcare facility.

Case Discussion

A 61 years old Malay gentleman with known case of hypertension, presented to the emergency department complaining of lethargy and poor oral intake for the past 2 days associated with vomiting. Clinically patient looks dehydrated but not lethargic or septic looking. Glasgow coma scale was 15/15. Initial vital sign showed patient in decompensated shock, but saturating under room air. Despite fluid resuscitation, patient still hypotensive thus was started on inotrope. His blood result showed marked leukocytosis, hyponatremia and AKI. His blood gases was normal and not acidotic. His LNR is 31. There is evidence of pneumonia on chest x-ray. Patient was referred to tertiary centre for septic shock secondary to pneumonia, however in view patient is clinically well, was asked by primary team to admit the patient to our hospital. Patient desaturated in ward within 6 hours of admission and subsequently succumbed to death.

Discussion

NLR indicates the amount of physiologic stress, level of inflammation and immune response of a disease. A normal range of LNR is between 1-2. Value of more than 8 and 18 classified as moderate and severe stress respectively. Despite being raised in chronic disease like coronary heart disease and cancer, LNR have high sensitivity in predicting severity of an illness including sepsis. Thus it is helpful in differentiating more severe disease versus milder one. In secondary level healthcare facilities such as district hospitals where equipment and trained personnel for critical care is limited, it is very challenging to manage such case. Therefore the patient needs to be stepped up to tertiary centres.

Test	Result	Reference Range
Hemoglobin	11.2	12.0-16.0
Hematocrit	33.0	37.0-47.0
Platelets	1,100	150-400
WBC	15,000	4,000-10,000
Neutrophils	85%	50-70%
Lymphocytes	10%	20-40%
NLR	31	1-2

Figure 1: Full blood count

Keywords: Neutrophil-Lymphocyte Ratio, Sepsis

Conclusion

NLR can serve as a simple and easily available parameter of stress and inflammation to predict the course and prognosis of a disease so that proper management can be initiated. It should be regularly used in emergency departments and other discipline

Reference

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